HYDROLOGY L22/D8 WAREHOUSE REMODEL

L22/D8

WAREHOUSE REMODEL

1 PLAN

ENCHANTMENT ENGINEERING, INC.

CIVIL CONSULTING ENGINEERS

J.W. BETTIS, REG. P.E. & L.S.
CLARENCE C. GODDARD, REG. P.E. & L.S.
ROBERT FOGLESONG, L.S.

1529-F EUBANK N.E.
PHONE 294-8850

MAIL TO BOX 11571
ALBUQUERQUE, NEW MEXICO 87112

L22.D8

Bruno -

RECEIVED
FEB 27 19
CITY ENGINEERS

February , 1978

Mr. V. M. Kimmick
City Engineer
Albuquerque, New Mexico

Dear Sir:

We have recently completed a drainage study of a Tract of land, in Tract B of Dorado Village covering approximately Two Acres.

Since this development is to be for Mini-Warehouses, and the owner prefers to have all other areas paved, drainage bec comes extremely difficult. All of the paved areas are to be on private land, and since the construction of french type drains would be so expensive, we prefer to pond water in the roadways between the various units. Water in these ponds should never exceed a depth of Five to Six inches, which should evaporate in about Two days in our wonderful climate. It will therefore not draw mosquitos etc. Hoping this method of complying with your drainage standard will meet with your approval.

Respectfully Yours,

J.W. Bettis

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

February 26, 1979

L22-D8x

Mr. Jacob A. Vigil
Consulting Engineer
Suite 1206
First National Bank Building-East
Albuquerque, New Mexico 87108

Ref: Storm Drainage Study for Warehouses at Dorado Village - Unit 3

Dear Mr. Vigil:

The drainage report for the captioned development has been reviewed and the comments are as follows:

The drainage report needs to include a vicinity map (Zone Atlas Reference Page) and a copy of the orthophoto map outlining the drainage area potentially affecting the site. Since no detailed information is available on potential local flooding problems, due to the mild grade of Dorado Place, it is necessary to assess the elevation offthe water surface in Dorado Place with the occurrence of a 100 year frequency storm. This information is necessary to evaluate the adequacy of the finished floor elevation for the proposed warehouses.

I note also that the grading plan proposed for the site is not supplied with the drainage report; the grading has to be such that the excess runoff (differerce between underdeveloped and developed runoff) may be able to exit the site without affecting the storage units.

Very truly yours,

Bruno Conegliano
Assist. City Engineer-Hydrology

BC/fs
cc - Dick Heller
Rich Leonard
Drainage File

SCHLEGEL AND LEWIS, ARCHITECTS 1620 Central SE
Albuquerque
87106
(505) 247-1529

Drainage file

July 5, 1979

Mr. Richard Heller, City Engineer
City of Albuquerque
Engineering Division
400 Marquette N.W.
Albuquerque, New Mexico 87102

JUL 1 1979

CITY ENGINEER

RE: Dorado Village

Dear Mr. Heller:

Upon completion of the above named project, we will inspect said project and certify that it has been constructed in a manner consistent with the approved Drainage Plan.

/s/ Engineering Consultant

CONSULTANTS, INC.
Engineering - Planning

By: Chas Lyle L Weiss
(Christopher L. Weiss)

Title: Pres.

Date: 7-5-79

I hereby release this plan for Building Permit:

Signed: Richard S Heller
(Mr. Richard Heller)

Title: City Engineer

Date: 7/9/79

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO._____ DATE: 1/14/83

PLANNING DIVISION NO._____

CONFERENCE RECAP

SUBJECT: Tracts B-4-1, B-4-2 and B-4-3, Unit 3 Dunaes Village

ATTENDANCE: WHO	REPRESENTING
George Rodriguez	Owner(s)
Fred J. Navarro	City

FINDINGS: Ponding not required if positive discharge is provided into a City R/W and if the downstream conditions are adequate.

Temporary retention (100% of the 10yr - 10day storm) on-site will be allowed for a period not to exceed two-years, in which time, positive discharge will be provided into a City R/W in a manner acceptable to the City. An agreement binding on the owners, heirs and assigns, acceptable to the City Attorney's Office, will be required for all temporary conditions.

A private easement required for storm runoff across property lines. Also required will be a temporary easement.

In either case, a drainage plan will be required for the temporary ponding scheme, or the positive discharge scheme.

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: Fred J. Navarro
TITLE:
DATE: 1/14/83

SIGNED: George T. Rodriguez
TITLE: Agent
DATE: 1-14-83

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City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 15, 1983

Mr. Dick Bryant
Bryant Engineering
Box 4604
Albuquerque, New Mexico 87196

Ref: Warehouse for Lavis dated 2/4/83
(L22-D8)

Dear Mr. Bryant:

The referenced drainage plan is approved with one condition, which is, the recording of a private easement for the proposed drainage scheme and ponding area.

Approval for occupancy of the subject warehouses is contingent on the City's certification of the drainage improvements outlined in the approved drainage plan and verification of the recorded private easement.

If you have any questions, please feel free to call me at 766-7644.

Sincerely,

Fred J. Aguirre, PE
Civil Engineer/Hydrology

FJA/el

cc: Drainage File
Reading File

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 6, 1983

Mr. Dick Bryant
Bryant Engineering
Box 4604
Albuquerque, New Mexico 87196

REF: Warehouse for Lavis dated 5/24/83 (L22-D8)

Dear Mr. Bryant:

The revised drainage plan is approved with one condition, which is the recording of a private easement for the proposed drainage scheme and ponding area.

Approval for occupany of the subject warehouse is contingent on the City's certification of the drainage improvements outlined in the approved drainage plan and verification of the recorded private easement.

If you have any questions, please feel free to call me at 766-7644.

Sincerely,

Fred J. Aguirre, PE
Civil Engineer/Hydrology

FJA:mrk

cc: George T. Rodriguez

MUNICIPAL DEVELOPMENT DEPARTMENT
Richard S. Heller, P.E., City Engineer
ENGINEERING DIVISION
Telephone (505) 766-7467
AN EQUAL OPPORTUNITY EMPLOYER

INFORMATION SHEET

PROJECT TITLE Warehouse Remodel TYPE OF SUBMITTAL Drainage Plan

ZONE ATLAS PAGE NO. L-22 CITY ADDRESS 221 Dorado Place S.E. L22-D8

LEGAL DESCRIPTION Tracts B-4-1, B-4-2, and B-4-3, Unit 3 Dorado Village

ENGINEERING FIRM Bryant Engineering CONTACT Dick Bryant

ADDRESS Box 4604, Albq. 87196 PHONE 836-6455

OWNER Gershwin Ettinger CONTACT

ADDRESS PHONE

ARCHITECT Burns Peters Group CONTACT Charlie Otero

ADDRESS 8000 Pennsylvania Circle N.E. PHONE 265-3645

SURVEYOR Dennis D. Lynn, L.S. CONTACT George Rodriguez

ADDRESS 11035 Central Ave., N.E. PHONE 296-5978

CONTRACTOR Ivey Construction CONTACT Kent Lake or Robt. Millard

ADDRESS 6808-B Escondido PHONE (915) 584-3553
El Paso, TX 79912

DATE SUBMITTED 5-26-83

BY Richard C Bryant

PREVIOUS APPROVAL 2-15-83 UNDER DIFFERENT DESIGN.

RECEIVED
NOV 01 1983
HYDROLOGY SECTION

Richard C. Bryant, P.E.

CIVIL ENGINEER

Post Office Box 4604, Albuquerque, New Mexico 87196 (505) 836-6455

Traffic Impact Studies
Signal Warrant Studies
Traffic Sign Inventories

Grading Plans
Drainage Studies
Design of Sewer, Water, & Streets

June 30, 1983

Fred J. Aguirre, P. E.
City Engineering - Hydrology
P. O. Box 1293
Albuquerque 87103

Subject: Warehouse on Dorado (L22-D8)

Dear Fred:

Your letter of June 6 approved my revised Drainage Plan for 221 Dorado Place SE on the condition that a private drainage easement be recorded to protect the runoff and ponding areas of the site.

Such an easement has been written, signed by the owners, notarized, and recorded. A copy is enclosed for your file. Let me know if there are any remaining problems. Thank you.

Sincerely,

Richard C Bryant

Richard C. Bryant, P. E.

Registered Professional Engineer in New Mexico, Arizona, and Ohio.
Member of the American Society of Civil Engineers.
Associate Member of the Institute of Transportation Engineers.

SF-3 SHORT FORM QUITCLAIM DEED—New Mexico Statutory Form—Rev. 6/75

83 43299

217

QUITCLAIM DEED

GERSHON ETTINGER, BARBARA ETTINGER AND HAROLD ETTINGER

for consideration paid, quitclaim S

to GERSHON ETTINGER, BARBARA ETTINGER AND HAROLD ETTINGER

whose address is 1705 TEXAS AVENUE, EL PASO, TEXAS 79901

the following described real estate in Bernalillo County, New Mexico:

That certain permanent surface drainage and pond easement comprising portion of Tracts "B-4-2" and "B-4-3", Unit 3, Dorado Village, an Addition to the City of Albuquerque, New Mexico, as the same is shown and designated on the plat of said Addition filed in the office of the County Clerk of Bernalillo County, New Mexico, on May 16, 1979, (Bk. C14-199);

Said Easement is binding and for the benefit of satisfying the Surface Drainage Requirements as set forth by City Engineering - Hydrology Section, for full development of Tracts "B-4-1", "B-4-2", and "B-4-3" of said Dorado Village; and shall not be revised without the review and approval of City Engineering Department - Hydrology Section.

Note: See Attached Exhibits "A" and "B" attached hereto for metes and bounds description and Exhibit map.

WITNESS hand and seal this day of , 19

(Seal) (Seal)

(Seal) (Seal)

ACKNOWLEDGMENT FOR NATURAL PERSONS

STATE OF ~~NEW MEXICO~~ TEXAS

COUNTY OF El Paso } ss.

The foregoing instrument was acknowledged before me this 13 day of June, 1983,

by GERSHON ETTINGER, BARBARA ETTINGER, HAROLD ETTINGER RCB

(Name or Names of Person or Persons Acknowledging)

My commission expires: Aug 31, 1982

(Seal)

Notary Public

FOR RECORDER'S USE ONLY

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

'83 JUN 30 P3:32

D188-A 217-219

RECORDER

DEPUTY

ACKNOWLEDGMENT FOR CORPORATION

STATE OF NEW MEXICO

COUNTY OF } ss.

The foregoing instrument was acknowledged before me this

day of , 19,

by (Name of Officer),

(Title of Officer) of (Name of Corporation Acknowledging),

a (State of Incorporation) corporation, on behalf of said corporation.

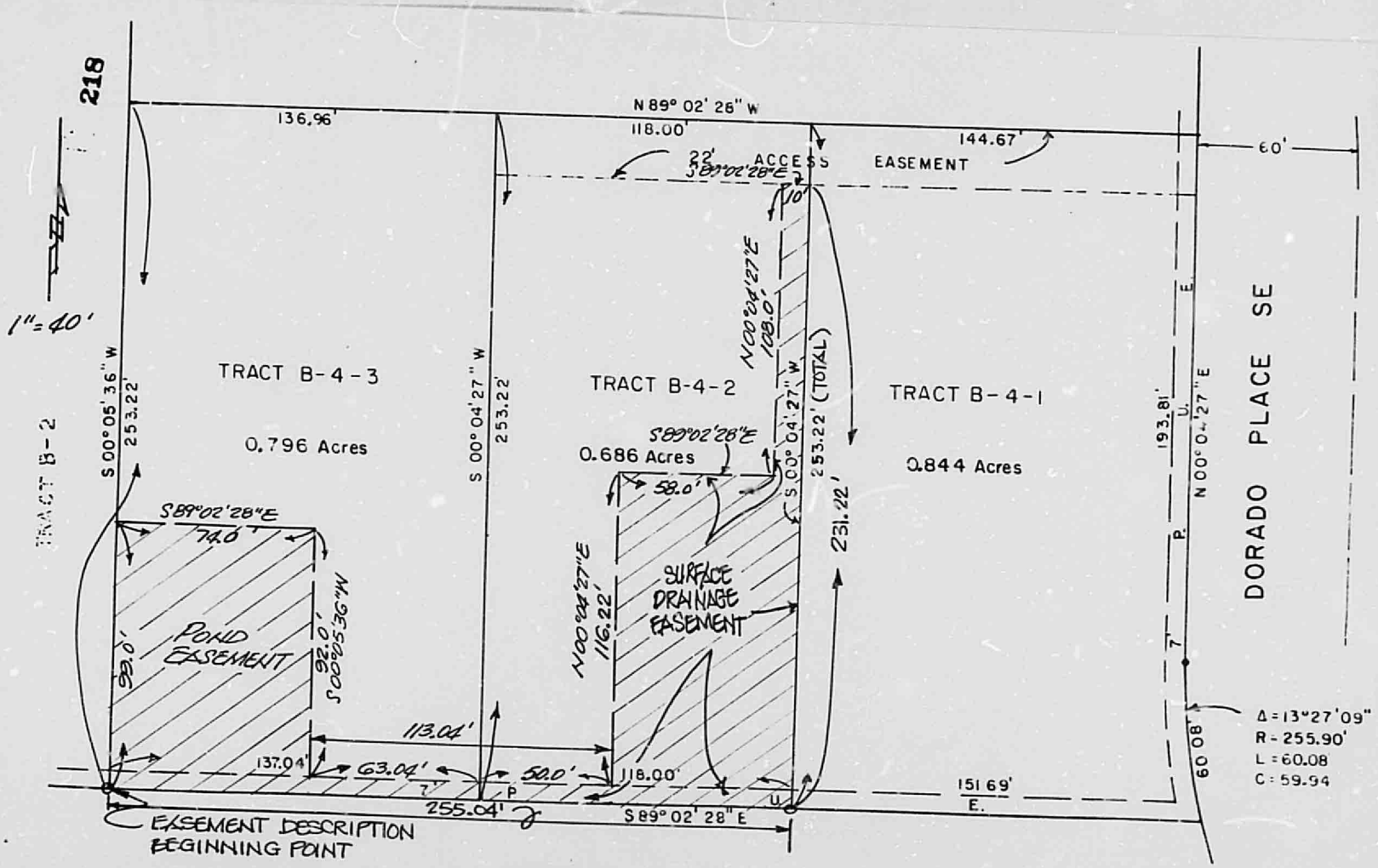
My commission expires:

(Seal)

Notary Public

THE VALLIANT CO. ALBUQUERQUE, N. M.

RCB 83


218
1"=40'
N 89° 02' 26" W
136.96'
118.00'
144.67'
60'
22'
ACCESS EASEMENT
S89°02'28"E
10'
N00°04'27"E
108.0'
S 00° 04' 27" W
253.22' (TOTAL)
231.22'
TRACT B-4-3
0.796 Acres
TRACT B-4-2
0.686 Acres
TRACT B-4-1
0.844 Acres
S 00° 05' 36" W
253.22'
S 00° 04' 27" W
253.22'
S89°02'28"E
74.0'
99.0'
POND EASEMENT
92.0'
S00°05'36"W
S89°02'28"E
58.0'
N00°04'27"E
116.22'
SURFACE DRAINAGE EASEMENT
113.04'
137.04'
63.04'
50.0'
118.00'
255.04'
S 89° 02' 28" E
151.69'
E.
193.81'
N 00° 04' 27" E
DORADO PLACE SE
Δ = 13°27'09"
R = 255.90'
L = 60.08
C = 59.94
60.08'
EASEMENT DESCRIPTION
BEGINNING POINT
TRACT B-2
TRACT 6
RCB 83

- EXHIBIT "A" -

WITHIN
TRACTS "B-4-2" & "B-4-3"
UNIT 3
DORADO VILLAGE
ALBUQUERQUE, NEW MEXICO

A CERTAIN PARCEL OF LAND SITUATE WITHIN THE CITY LIMITS OF THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO; BEING AND COMPRISING PORTION OF TRACT "B-4-2" AND PORTION OF TRACT "B-4-3", OF THE "REPLAT OF TRACT B-4 OF UNIT 3, DORADO VILLAGE", AN ADDITION TO THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT OF SAID ADDITION FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO, ON MAY 16, 1979, (BOOK C14-199).

BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS SURVEY AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE EASEMENT HEREIN DESCRIBED; SAID SOUTHWEST CORNER BEING COMMON TO THE SOUTHWEST CORNER OF AFOREMENTIONED TRACT "B-4-3"; THENCE, LEAVING SAID POINT OF BEGINNING,

N 00°05'36" E, 99.00 FEET DISTANCE TO A POINT; THENCE,

S 89°02'28" E, 74.00 FEET DISTANCE TO A POINT; THENCE,

S 00°05'36" W, 92.00 FEET DISTANCE TO A POINT; THENCE,

S 89°02'28" E, 113.04 FEET DISTANCE TO A POINT; THENCE,

N 00°04'27" E, 116.22 FEET DISTANCE TO A POINT; THENCE,

S 89°02'28" E, 58.00 FEET DISTANCE TO A POINT; THENCE,

N 00°04'27" E, 108.00 FEET DISTANCE TO A POINT; THENCE,

S 89°02'28" E, 10.00 FEET DISTANCE TO THE NORTHEAST CORNER OF THE EASEMENT HEREIN DESCRIBED, (A POINT ON THE EAST LINE OF AFOREMENTIONED TRACT "B-4-2"); THENCE,

S 00°04'27" W, 231.22 FEET DISTANCE TO THE SOUTHEAST CORNER OF THE EASEMENT HEREIN DESCRIBED, (SAID POINT BEING COMMON TO THE SOUTHEAST CORNER OF AFOREMENTIONED TRACT "B-4-2"); THENCE,

N 89°02'28" W, 255.04 FEET DISTANCE ALONG THE SOUTHERLY LINE OF SAID TRACTS "B-4-2" AND "B-4-3" TO THE SOUTHWEST CORNER, THE POINT AND PLACE OF BEGINNING OF THE SURFACE DRAINAGE AND POND EASEMENT HEREIN DESCRIBED, AND CONTAINING 17,578.0 SQUARE FEET, (0.404 ACRE), MORE OR LESS.

- EXHIBIT "B" -

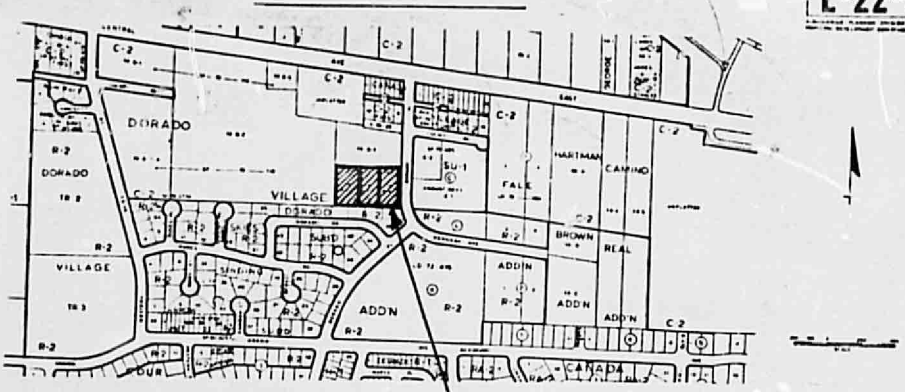
RCB 83

CITY OF ALBUQUERQUE L22-D8

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

VICINITY MAP

L-22-Z



PROJECT LOCATION

LEGAL DESCRIPTION:
TRACTS "B-4-1", "B-4-2", & "B-4-3"
UNIT THREE (3), DORADO VILLAGE,
ALBUQUERQUE, NEW MEXICO
(PLAT FILED: 5-16-79)

OWNER:
GERSHWIN ETTINGER

RICHARD CLARK BRYANT
NEW MEXICO
5-24-83
REGISTERED PROFESSIONAL ENGINEER

ENGINEER'S SEAL

NOTICE TO CONTRACTOR

1. An excavation/construction permit will be required before beginning any work within City right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.
2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with "Contract Documents for City-Wide Utilities and Cash Paving No. 31."
3. Two working days prior to any excavation, contractor must contact Line Locating Service, 765-1234, for location of existing utilities.
4. Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.
5. Backfill compaction shall be according to RESIDENTIAL street use.

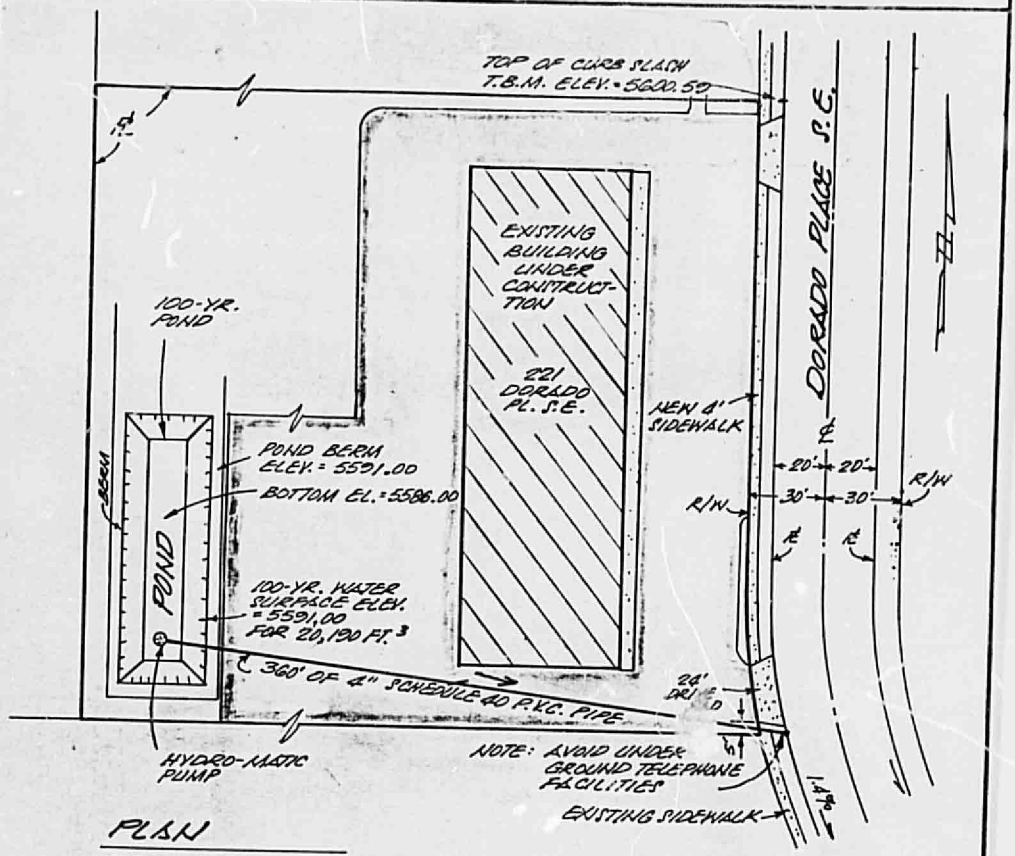
REVISION: 5-24-83 9K 3Jun83 P-4605 C-21 Sun City Con

APPROVALS	NAME	DATE	TITLE: WAREHOUSE REMODEL FOR GERSHWIN ETTINGER	
A.C.E./DESIGN	[illegible]	4Feb83		
INSPECTOR	[illegible]	6/24/83	PERMIT NO.	MAP NO. L-22-Z
A.C.E./FIELD	[illegible]	[illegible]	SHEET 1 OF 2	

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT.

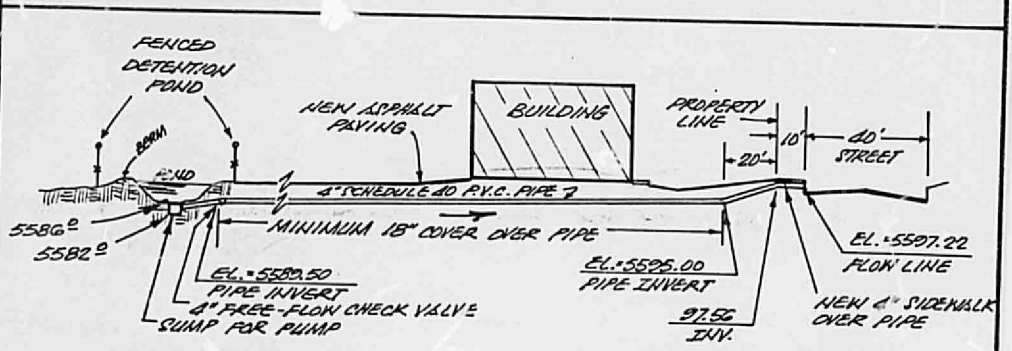
CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



PLAN

SCALE: 1" = 50'



PROFILE

SCALE: 1" = 50' HORIZONTAL

NOTE: CONSTRUCT DRAIN OUTLET IN STREET R/W IN ACCORDANCE WITH CITY STANDARD DETAIL DRAWING X-15.

REVISION: 5-24-83 GK 3 Jun 83

C-21

APPROVALS	NAME	DATE	TITLE: WAREHOUSE REMODEL FOR GERSHWIN ETTINGER
A.C.E./DESIGN	[illegible]	4 Feb 83	
INSPECTOR	[illegible]	[illegible]	PERMIT NO.
A.C.E./ FIELD	[illegible]	[illegible]	SHEET 2 OF 2 — MAP NO. L-22-Z

STORM DRAINAGE STUDY

FOR

WAREHOUSES AT DORADO VILLAGE - UNIT 3

RECEIVED
JAN 18 1979
CITY ENGINEERS

JANUARY 1979

JACOB A VIGIL - CONSULTING ENGINEER

Jacob A. Vigil
Consulting Engineers

SUITE 1206
FIRST NATIONAL BANK
BUILDING - EAST
ALBUQUERQUE,
NEW MEXICO, 87108
(505) 255-5186

January 17, 1979

Mitchell Associates, P.A.
205 Fourth Street, S.W.
Albuquerque, New Mexico 87102

Attention: Mr. Don Mitchell

Dear Sir:

Transmitted herewith is the Storm Drainage Study for the Warehouses located at Dorado Village Unit 3. The recommendations in this Study are in accordance with the requirements of the City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority.

Thank you for the opportunity of serving you.

Respectfully submitted,

Jacob A. Vigil

Jacob A. Vigil, P.E.

JAV/bvm

TABLE OF CONTENTS

LETTER OF TRANSMITTAL

STORM DRAINAGE STUDY

1. Purpose . . . . . Page 1
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3. Location. 1
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5. Proposed. . . . . 1 & 2
6. Proposed Drainage Plan. 2
7. Conclusions and Recommendations 2

APPENDIX

1. Design Calculations . . . . . Page 1 - 7
2. Drainage Plan . . . . . Map "A"

STORM DRAINAGE STUDY

WAREHOUSES AT DORADO VILLAGE UNIT 3

I. PURPOSE: The purpose of this report is to formulate a comprehensive study of drainage affecting the site development and to show that the development does not restrict drainage in a manner to cause damage to adjacent land owners.

II. SCOPE: This report is limited to runoff originating within the development. General engineering procedures are presented for calculation of storm runoff and storage.

III. LOCATION: The site is located at 221 Dorado Place, S.E., in Albuquerque, New Mexico, and consists of 2.35 acres of sparse grass to bare soil. The tract description is Tract B-4, Dorado Village Unit 3.

IV. EXISTING DRAINAGE: The existing drainage is usually sheet flow flowing from front to rear of the lot. The existing paved streets with curb and gutter handle the runoff site drainage. There are no significant geological or topographic features.

V. PROPOSED DEVELOPMENT: The proposed development will consist of commercial warehouses. The coefficient of runoff "C" has

been estimated at 0.90 for impervious pavement.

VI. PROPOSED DRAINAGE PLAN: The proposed drainage plan is to contain all runoff after development by the use of dry wells (French Drains) with drop inlet structure and discharge pipes. The dry wells have been designated to store the maximum amount of rainfall occurring within one hour for a 100 year frequency with 100% retention. The berm at the rear of the property has been designed to retain the excess storage that would occur during a 24 hour storm with 100% retention.

VII. CONCLUSIONS AND RECOMMENDATIONS: On the basis of this study, the property under consideration can be adequately developed as proposed, if the project is constructed as recommended.

WAREHOUSES
(DON MITCHELL)

JACOB A. VIGIL

JANUARY 15, 1979

1. DETERMINATION OF DRAINAGE AREAS:

AREA ① = 90' x 124' = 11,160 FT²

AREA ② = 124' x 124' = 15,376 FT²

AREA ③ = 120' x 124' = 14,880 FT²

AREA ④ = ~~50~~ 75' x 124' = ~~6,200~~ 9,300 FT²

AREA ⑤ = ~~50~~ 75' x 130' = 9,750 FT²

AREA ⑥ = 120' x 130' = 15,600 FT²

AREA ⑦ = 125' x 130' = 16,250 FT²

AREA ⑧ = 88' x 130' = 11,440 FT²

2. RUNOFF DETERMINATION (VOLUME):
(100% RUNOFF)

$V_1 = 11,160\ FT^2 \times \frac{1.90''}{12} = 1,767\ FT^3$

$V_2 = 15,376\ FT^2 \times \frac{1.90''}{12} = 2,435\ FT^3$

$V_3 = 14,880\ FT^2 \times \frac{1.90}{12} = 2,356\ FT^3$

$V_4 = 9,300\ FT^2 \times \frac{1.90}{12} = 1,472\ FT^3$

$V_5 = 9,750\ FT^2 \times \frac{1.90}{12} = 1,544\ FT^3$

$V_6 = 15,600\ FT^2 \times \frac{1.90}{12} = 2,470\ FT^3$

WAREHOUSES
(DON MITCHELL)

JACOB A. VIGIL
SHT 2 OF 7
JANUARY 15, 1979

2. CONT'D:

$V_7 = 16,250 \times \frac{1.90}{12} = 2,573 \text{ FT}^3$

$V_8 = 11,440 \times \frac{1.90}{12} = 1,811 \text{ FT}^3$

3. STORAGE REQUIREMENTS:

$S_1 = 1,767 \text{ FT}^3 \times 0.90$ (RUNOFF COEFFICIENT) $= 1,590 \text{ FT}^3$

$S_2 = 2,435 \text{ FT}^3 \times 0.90 = 2,192 \text{ FT}^3$

$S_3 = 2,356 \text{ FT}^3 \times 0.90 = [illegible]0 \text{ FT}^3$

$S_4 = 1,472 \text{ FT}^3 \times 0.90 = 1,325 \text{ FT}^3$

$S_5 = 1,544 \text{ FT}^3 \times 0.90 = 1,390 \text{ FT}^3$

$S_6 = 2,470 \text{ FT}^3 \times 0.90 = 2,223 \text{ FT}^3$

$S_7 = 2,573 \text{ FT}^3 \times 0.90 = 2316 \text{ FT}^3$

$S_8 = 1,811 \text{ FT}^3 \times 0.90 = 1630 \text{ FT}^3$

$14,786 \text{ FT}^3$ TOTAL

THE ABOVE FIGURES WILL BE USED FOR DETERMINATION OF THE SIZES FOR THE FRENCH DRAINS. THE TERRAIN SLOPES FROM FRONT TO REAR, THEREFORE, IT WILL BE NECESSARY TO PROVIDE A POSITIVE METHOD OF RETAINING FLOW WITHIN THE PROPERTY. IT IS RECOMMENDED THAT A "U" SHAPE PONDING AREA BE PROVIDED AT THE REAR AS A SAFETY PRECAUTION.

WAREHOUSE
(DON MITCHELL)

JACOBS A. VIGIL
SHT. 3 OF 1
JANUARY 16, 1979

4. DETERMINE RUNOFF FOR 24 HOUR DURATION – 100YR FREQUENCY:
(100% RUNOFF)

$V_{TOTAL} = [11,160 + 15,376 + 14,880 + 9,300 + 9,750 + 15,600 + 16,250 + 11,440 = 103,756\ FT^2] \times \frac{2.70''\ PER\ 24\ HRS}{12''/FT} =$

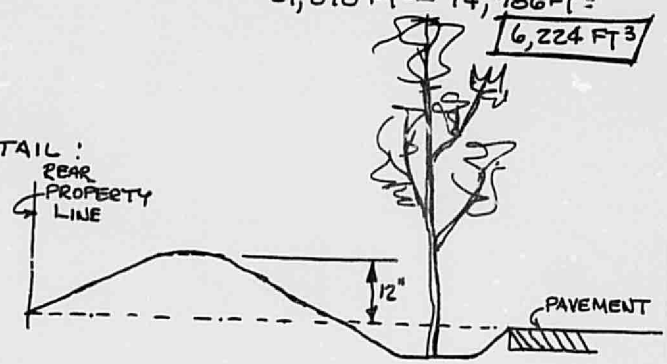
$23,345\ FT^3$ ←

$S_{TOTAL} = 23,345 \times 0.90 = 21,010\ FT^3$

ADDITIONAL SURFACE STORAGE REQUIRED:

$21,010\ FT^3 - 14,786\ FT = \boxed{6,224\ FT^3}$

SUGGESTED DETAIL:



5. DETERMINE SIZE OF FRENCH DRAINS:

MINIMUM BOTTOM WIDTH 8 FT. (MINIMUM WIDTH FOR CONSTRUCTION EQUIP.)

MINIMUM DEPTH 4 FT WITH 2:1 SIDE SLOPES

$D_1 = \frac{1,590\ FT^3}{0.40\ POROSITY \times 16\ AVE\ WIDTH \times 4'\ DEPTH} + 8\ FT$

$= 70\ FT + 8'$

$= 78' \times 24'$ (TOP DIMENSIONS)

$62' \times 8'$ (BOTTOM DIMENSIONS)

EXAMPLE!

WAREHOUSES
(DON MITCHELL)

JACOB A. VICIC
SHT. 4 OF 7
JANUARY 16, 1979

5. CONT'D.

$$L_1 = \overset{(\text{AREA})}{A_1 + A_8} = \overset{(\text{STORAGE})}{S_1 + S_8}$$

$$L_1 = \frac{1{,}590\ FT^3 + 1{,}630\ FT^3}{0.40\ \text{POROSITY}} = 8{,}050\ FT^3\ \text{REQ'D}$$

$$FD_1 : \frac{8050\ FT^3}{4'\ \text{DEPTH} \times 16'\ \text{AVE WIDTH}} = 126\ \text{FT AVE LENGTH}$$

F.D.1 : 24 FT. WIDE X 134 FT LONG (TOP DIMENSIONS)
8 FT. WIDE X 118 FT LONG (BOTTOM DIMENSIONS)

$$F.D._2 : \frac{\overset{S_2}{2{,}192} + \overset{S_7}{2{,}316}}{0.40 \times 4' \times 16'} = 176\ \text{FT AVE LENGTH}$$

24' X ~~168'~~ 184'
8' X 168'

$$F.D._3 : \frac{\overset{S_3}{3{,}120} + \overset{S_6}{2223}}{0.40 \times 4' \times 16'} = 169\ \text{FT AVE LENGTH}$$

24' X 177'
8' X 168'

$$F.D._4 : \frac{\overset{S_4}{1325} + \overset{S_5}{1{,}390}}{0.40 \times 4 \times 16'} = 106\ \text{FT AVE LENGTH}$$

24' X 114'
8' X 98'

WAREHOUSES
(DON MITCHELL)

JACOB A. VIGIL
SHT. 5 OF 7
JANUARY 16, 1979

6. DETERMINE PEAK RUNOFF TO DETERMINE SIZE OF DROP INLETS:

$$Q_1 = CIA = 0.90 \times 5.16 \times \frac{\overset{A_1}{11,160} + \overset{A_8}{11,440}}{43,560}$$

$Q_1 = 2.41$ CFS ←

$$Q_2 = 0.90 \times 5.16 \times \frac{\overset{A_2}{15,376} + \overset{A_7}{16,250}}{43,560}$$

$Q_2 = 3.37$ CFS ←

$$Q_3 = 0.90 \times 5.16 \times \frac{\overset{A_3}{14,880} + \overset{A_6}{15,600}}{43,560}$$

$Q_3 = 3.25$ CFS ←

$$Q_4 = 0.90 \times 5.16 \times \frac{9,300 + 9,750}{43,560}$$

$Q_4 = 2.03$ CFS ←

CAPACITY OF A 2'-0" X 3'-0" (INSIDE DIMENSIONS) DROP INLET:
L = 10'

$Q = CLH^{3/2}$
$= 3.30 \times 10 \times 0.67^{3/2}$
$= 18.0$ CFS 100% EFFICIENT
9.0 CFS 50% EFFICIENT > 3.37 CFS O.K.

WAREHOUSES
(DON MITCHELL)

JACOB A. VIGIL
SHT. 6 OF 7
JANUARY 16, 1979

6. CONT'D.

DETERMINE PIPE CAPACITY OF 15" CM.P.

$Q = 9.0$ CFS

4.5 CFS PER PIPE

$\frac{HW}{D} = 1.2$ FROM FHWA CHART

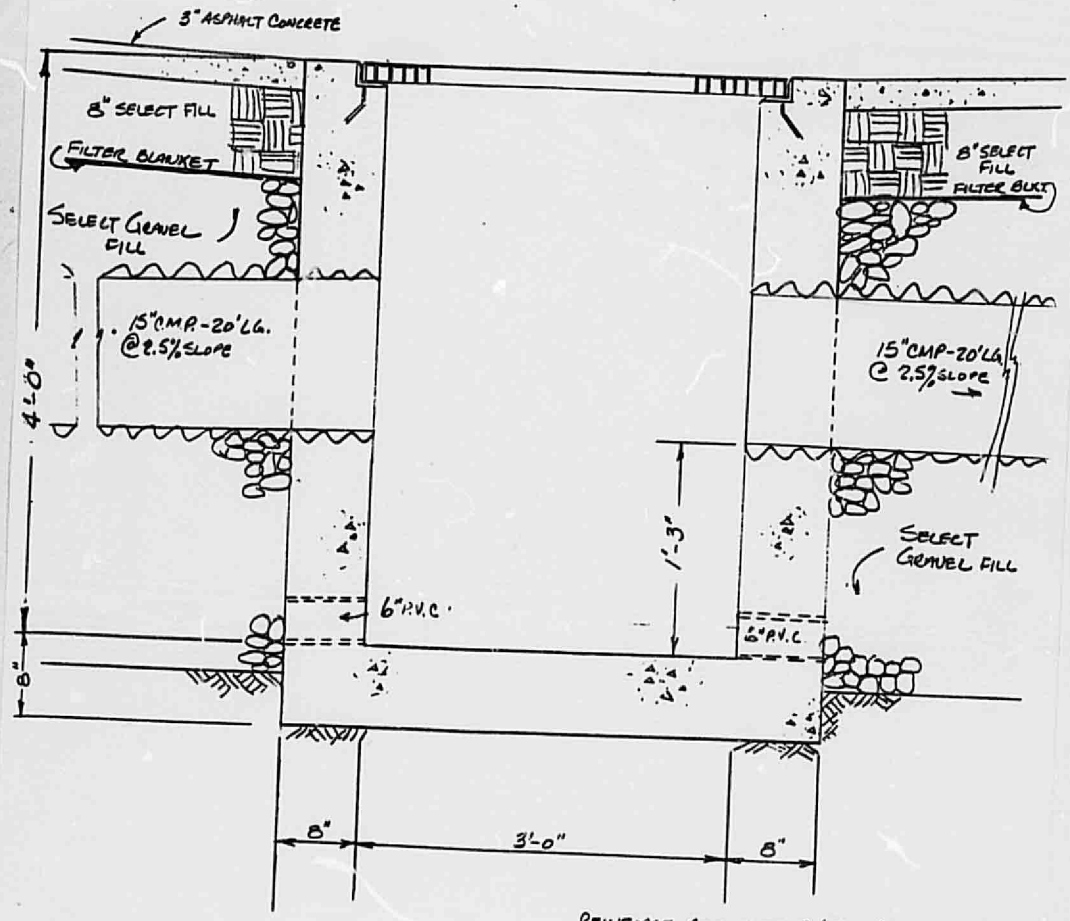
$S = 2.50\%$ SLOPE REQUIRED!

$HW = 1.2 \times \frac{15''}{12''}$

$= 1.50$ FT. O.K.

WAREHOUSES
(DON MITCHELL)

JACOB A. VIGIL
SHT. 1 OF 1
JANUARY 16, 1979



REINFORCE BOX WITH #4@12" O.C. EA. WAY.
PROVIDE REBAR AROUND PIPE OPENINGS.

DROP INLET
(SECTION)

1363

HYDROLOGY L22/D8 WAREHOUSE REMODEL

L22/D8

WAREHOUSE REMODEL

1 PLAN

ENCHANTMENT ENGINEERING, INC.

CIVIL CONSULTING ENGINEERS

J.W. BETTIS, REG. P.E. & L.S.
CLARENCE C. GODDARD, REG. P.E. & L.S.
ROBERT FOGLESONG, L.S.

1529-F EUBANK N.E.
PHONE 294-8850

MAIL TO BOX 11871
ALBUQUERQUE, NEW MEXICO 87112

L22.08

Bruce –

RECEIVED
FEB 27 19
CITY ENGINEERS

February 27, 1978

Mr. V. M. Kimmick
City Engineer
Albuquerque, New Mexico

Dear Sir:

We have recently completed a drainage study of a Tract of land, in Tract B of Dorado Village covering approximately Two Acres.

Since this development is to be for Mini-Warehouses, and the owner prefers to have all other areas paved, drainage becomes extremely difficult. All of the paved areas are to be on private land, and since the construction of french type drains would be so expensive, we prefer to pond water in the roadways between the various units. Water in these ponds should never exceed a depth of Five to Six inches, which should evaporate in about Two days in our wonderful climate. It will therefore not draw mosquitos etc. Hoping this method of complying with your drainage standard will meet with your approval.

Respectfully Yours,

J.W. Bettis

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

February 26, 1979

L22-D8X

Mr. Jacob A. Vigil
Consulting Engineer
Suite 1206
First National Bank Building-East
Albuquerque, New Mexico 87108

Ref: Storm Drainage Study for Warehouses at Dorado Village - Unit 3

Dear Mr. Vigil:

The drainage report for the captioned development has been reviewed and the comments are as follows:

The drainage report needs to include a vicinity map (Zone Atlas Reference Page) and a copy of the orthophoto map outlining the drainage area potentially affecting the site. Since no detailed information is available on potential local flooding problems, due to the mild grade of Dorado Place, it is necessary to assess the elevation offthe water surface in Dorado Place with the occurrence of a 100 year frequency storm. This information is necessary to evaluate the adequacy of the finished floor elevation for the proposed warehouses.

I note also that the grading plan proposed for the site is not supplied with the drainage report; the grading has to be such that the excess runoff (difference between underdeveloped and developed runoff) may be able to exit the site without affecting the storage units.

Very truly yours,

Bruno Conegliano
Assist. City Engineer-Hydrology

BC/fs
cc - Dick Heller
Rich Leonard
Drainage File

SCHLEGEL AND LEWIS, ARCHITECTS 1620 Central SE
Albuquerque
87106
(505) 247-1529

Drainage file

July 5, 1979

Mr. Richard Heller, City Engineer
City of Albuquerque
Engineering Division
400 Marquette N.W.
Albuquerque, New Mexico 87102

JUL 1 1979

CITY ENGINEER

RE: Dorado Village

Dear Mr. Heller:

Upon completion of the above named project, we will inspect said project and certify that it has been constructed in a manner consistent with the approved Drainage Plan.

/s/ Engineering Consultant

CONSULTANTS, INC.
Engineering - Planning

By: Chas Lyle L Weiss
(Christopher L. Weiss)

Title: Pres.

Date: 7-5-79

I hereby release this plan for Building Permit:

Signed: Richard S Heller
(Mr. Richard Heller)

Title: City Engineer

Date: 7/9/79

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO._____ DATE: 1/14/83

PLANNING DIVISION NO._____

CONFERENCE RECAP

SUBJECT: Tracts B-4-1, B-4-2 and B-4-3, Unit 3 Dunno Village

ATTENDANCE: WHO	REPRESENTING
George Rodriguez	Owner(s)
Fred J. Nelson	City

FINDINGS: Ponding not required if positive discharge is provided into a City R/W and if the downstream conditions are adequate.

Temporary retention (100% of the 10YR - 10DAY flow) on-site will be allowed for a period not to exceed two years, in which time, positive discharge will be provided into a City R/W in a manner acceptable to the City. An agreement binding on the owner, heirs and assigns, acceptable to the City Attorney's office, will be required for this temporary condition.

A private easement required for storm runoff across private lines. Also required will be a temporary easement.

In either case, a drainage plan will be be required for the temporary ponding system, or the positive discharge system.

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: Fred J. Nelson	SIGNED: George T. Rodriguez
TITLE:	TITLE: Agent
DATE: 1/14/83	DATE: 1-14-83

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 15, 1983

Mr. Dick Bryant
Bryant Engineering
Box 4604
Albuquerque, New Mexico 87196

Ref: Warehouse for Lavis dated 2/4/83
(L22-D8)

Dear Mr. Bryant:

The referenced drainage plan is approved with one condition, which is, the recording of a private easement for the proposed drainage scheme and ponding area.

Approval for occupancy of the subject warehouses is contingent on the City's certification of the drainage improvements outlined in the approved drainage plan and verification of the recorded private easement.

If you have any questions, please feel free to call me at 766-7644.

Sincerely,

Fred J. Aguirre, PE
Civil Engineer/Hydrology

FJA/el

cc: Drainage File
Reading File

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 6, 1983

Mr. Dick Bryant
Bryant Engineering
Box 4604
Albuquerque, New Mexico 87196

REF: Warehouse for Lavis dated 5/24/83 (L22-D8)

Dear Mr. Bryant:

The revised drainage plan is approved with one condition, which is the recording of a private easement for the proposed drainage scheme and ponding area.

Approval for occupany of the subject warehouse is contingent on the City's certification of the drainage improvements outlined in the approved drainage plan and verification of the recorded private easement.

If you have any questions, please feel free to call me at 766-7644.

Sincerely,

Fred J. Aguirre, PE
Civil Engineer/Hydrology

FJA:mrk

cc: George T. Rodriguez

INFORMATION SHEET

PROJECT TITLE Warehouse Remodel TYPE OF SUBMITTAL Drainage Plan L22-D8

ZONE ATLAS PAGE NO. L-22 CITY ADDRESS 221 Dorado Place S.E.

LEGAL DESCRIPTION Tracts B-4-1, B-4-2, and B-4-3, Unit 3 Dorado Village

ENGINEERING FIRM Bryant Engineering CONTACT Dick Bryant

ADDRESS Box 4604, Albq. 87196 PHONE 836-6455

OWNER Gershwin Ettinger CONTACT

ADDRESS PHONE

ARCHITECT Burns Peters Group CONTACT Charlie Otero

ADDRESS 8000 Pennsylvania Circle N.E. PHONE 265-3645

SURVEYOR Dennis D. Lynn, L.S. CONTACT George Rodriguez

ADDRESS 11035 Central Ave., N.E. PHONE 296-5978

CONTRACTOR Ivey Construction CONTACT Kent Lake or Robt. Millard

ADDRESS 6808-B Escondido PHONE (915) 584-3553
El Paso, TX 79912

DATE SUBMITTED 5-26-83

BY Richard C Bryant

PREVIOUS APPROVAL 2-15-83 UNDER DIFFERENT DESIGN.

RECEIVED
NOV 01 1983
HYDROLOGY SECTION

Richard C. Bryant, P.E.

CIVIL ENGINEER

Post Office Box 4604, Albuquerque, New Mexico 87196 (505) 836-6455

Traffic Impact Studies
Signal Warrant Studies
Traffic Sign Inventories

Grading Plans
Drainage Studies
Design of Sewer, Water, & Streets

June 30, 1983

'red J. Aguirre, P. E.
City Engineering - Hydrology
P. O. Box 1293
Albuquerque 87103

Subject: Warehouse on Dorado (L22-D8)

Dear Frcd:

Your letter of June 6 approved my revised Drainage Plan for 221 Dorado Place SE on the condition that a private drainage easement be recorded to protect the runoff and ponding areas of the site.

Such an easement has been written, signed by the owners, notarized, and recorded. A copy is enclosed for your file. Let me know if there are any remaining problems. Thank you.

Sincerely,

Richard C Bryant

Richard C. Bryant, P. E.

Registered Professional Engineer in New Mexico, Arizona, and Ohio.
Member of the American Society of Civil Engineers.
Associate Member of the Institute of Transportation Engineers.

SF-3 SHORT FORM QUITCLAIM DEED—New Mexico Statutory Form—Rev. 6/75

83 43299

217

QUITCLAIM DEED

GERSHON ETTINGER, BARBARA ETTINGER AND HAROLD ETTINGER

for consideration paid, quitclaim $

to GERSHON ETTINGER, BARBARA ETTINGER AND HAROLD ETTINGER

whose address is 1705 TEXAS AVENUE, EL PASO, TEXAS 79901

the following described real estate in Bernalillo County, New Mexico:

That certain permanent surface drainage and pond easement comprising portion of Tracts "B-4-2" and "B-4-3", Unit 3, Dorado Village, an Addition to the City of Albuquerque, New Mexico, as the same is shown and designated on the plat of said Addition filed in the office of the County Clerk of Bernalillo County, New Mexico, on May 16, 1979, (Bk. C14-199);

Said Easement is binding and for the benefit of satisfying the Surface Drainage Requirements as set forth by City Engineering - Hydrology Section, for full development of Tracts "B-4-1", "B-4-2", and "B-4-3" of said Dorado Village; and shall not be revised without the review and approval of City Engineering Department - Hydrology Section.

Note: See Attached Exhibits "A" and "B" attached hereto for metes and bounds description and Exhibit map.

WITNESS hand and seal this day of , 19

(Seal) (Seal)

(Seal) (Seal)

ACKNOWLEDGMENT FOR NATURAL PERSONS

STATE OF ~~NEW MEXICO~~ TEXAS
COUNTY OF El Paso } ss.

The foregoing instrument was acknowledged before me this 13 day of June, 1983,
by GERSHON ETTINGER, BARBARA ETTINGER, HAROLD ETTINGER RCB
(Name or Names of Person or Persons Acknowledging)

My commission expires: AUG 3, 1984
(Seal)

Notary Public

ACKNOWLEDGMENT FOR CORPORATION

STATE OF NEW MEXICO
COUNTY OF } ss.

The foregoing instrument was acknowledged before me this
day of , 19,
by (Name of Officer),
(Title of Officer) of (Name of Corporation Acknowledging),
a (State of Incorporation) corporation, on behalf of said corporation.

My commission expires:

(Seal)

Notary Public

FOR RECORDER'S USE ONLY

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

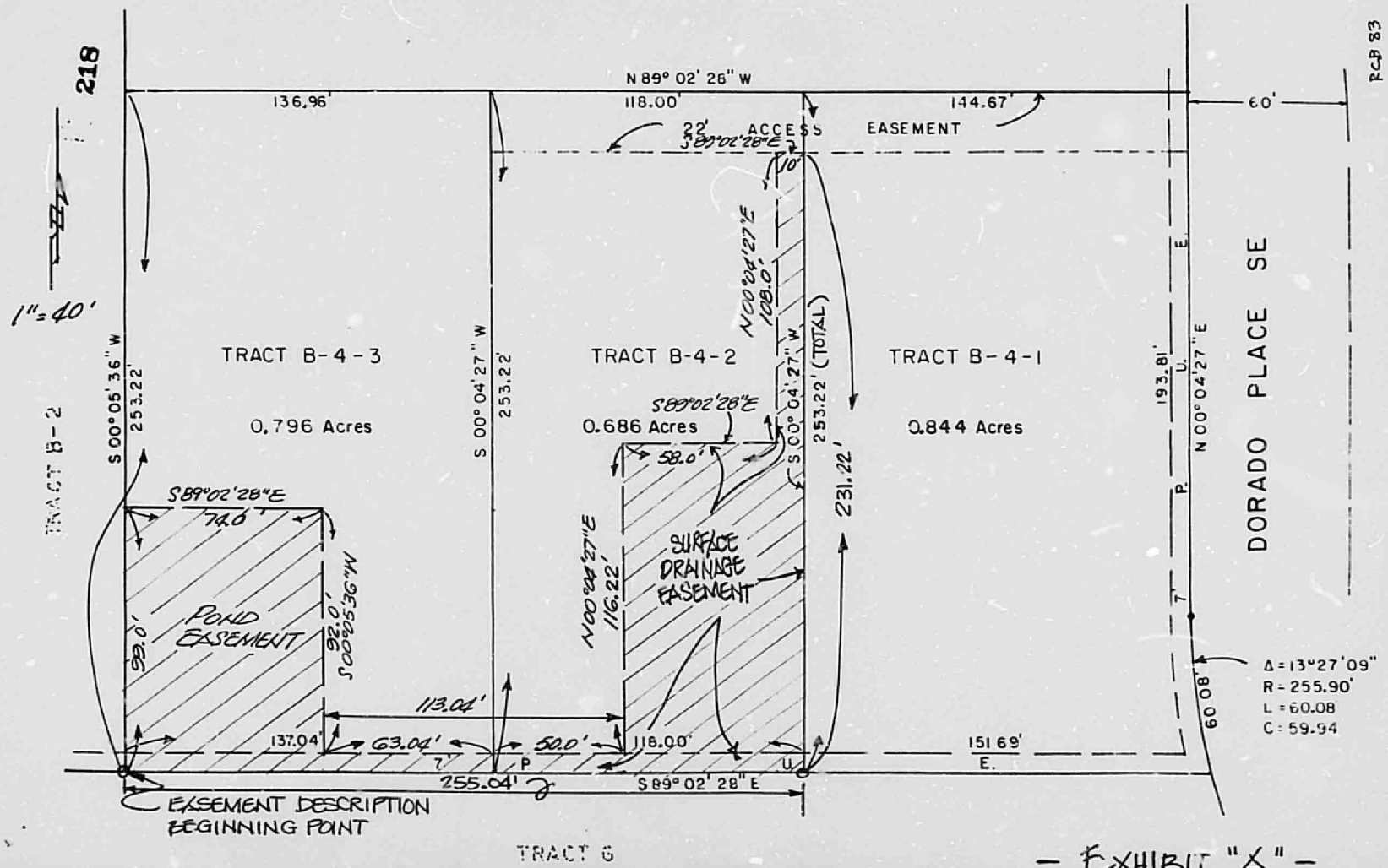
'83 JUN 30 P3 :32

D188-A 217-219

RECORDER
DEPUTY

THE VALLIANT CO. ALBUQUERQUE, N. M.

RCB 83


218
1"=40'
N 89° 02' 26" W
136.96'
118.00'
144.67'
60'
22' ACCESS EASEMENT
S 89°02'28"E
10'
N 00°04'27"E 108.0'
TRACT B-4-3
0.796 Acres
TRACT B-4-2
0.686 Acres
TRACT B-4-1
0.844 Acres
S 00° 05' 36" W
253.22'
S 00° 04' 27" W
253.22'
S 00° 04' 27" W
253.22' (TOTAL)
231.22'
193.81'
N 00° 04' 27" E
S 89°02'28"E
74.0'
99.0'
POND EASEMENT
92.0' S 00°05'36"W
S 89°02'28"E
58.0'
N 00°04'27"E 116.22'
SURFACE DRAINAGE EASEMENT
113.04'
137.04'
63.04'
50.0'
118.00'
151.69'
255.04'
S 89° 02' 28" E
EASEMENT DESCRIPTION BEGINNING POINT
TRACT 6
TRACT B-2
DORADO PLACE SE
Δ = 13°27'09"
R = 255.90'
L = 60.08
C = 59.94
60.08'
RCB 83

- EXHIBIT "A" -

DESCRIPTION OF
SURFACE DRAINAGE AND POND EASEMENT
WITHIN
TRACTS "B-4-2" & "B-4-3"
UNIT 3
DORADO VILLAGE
ALBUQUERQUE, NEW MEXICO

A CERTAIN PARCEL OF LAND SITUATE WITHIN THE CITY LIMITS OF THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO; BEING AND COMPRISING PORTION OF TRACT "B-4-2" AND PORTION OF TRACT "B-4-3", OF THE "REPLAT OF TRACT B-4 OF UNIT 3, DORADO VILLAGE", AN ADDITION TO THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT OF SAID ADDITION FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO, ON MAY 16, 1979, (BOOK C14-199).

BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS SURVEY AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE EASEMENT HEREIN DESCRIBED; SAID SOUTHWEST CORNER BEING COMMON TO THE SOUTHWEST CORNER OF AFOREMENTIONED TRACT "B-4-3"; THENCE, LEAVING SAID POINT OF BEGINNING,

N 00°05'36" E, 99.00 FEET DISTANCE TO A POINT; THENCE,

S 89°02'28" E, 74.00 FEET DISTANCE TO A POINT; THENCE,

S 00°05'36" W, 92.00 FEET DISTANCE TO A POINT; THENCE,

S 89°02'28" E, 113.04 FEET DISTANCE TO A POINT; THENCE,

N 00°04'27" E, 116.22 FEET DISTANCE TO A POINT; THENCE,

S 89°02'28" E, 58.00 FEET DISTANCE TO A POINT; THENCE,

N 00°04'27" E, 108.00 FEET DISTANCE TO A POINT; THENCE,

S 89°02'28" E, 10.00 FEET DISTANCE TO THE NORTHEAST CORNER OF THE EASEMENT HEREIN DESCRIBED, (A POINT ON THE EAST LINE OF AFOREMENTIONED TRACT "B-4-2"); THENCE,

S 00°04'27" W, 231.22 FEET DISTANCE TO THE SOUTHEAST CORNER OF THE EASEMENT HEREIN DESCRIBED, (SAID POINT BEING COMMON TO THE SOUTHEAST CORNER OF AFOREMENTIONED TRACT "B-4-2"); THENCE,

N 89°02'28" W, 255.04 FEET DISTANCE ALONG THE SOUTHERLY LINE OF SAID TRACTS "B-4-2" AND "B-4-3" TO THE SOUTHWEST CORNER, THE POINT AND PLACE OF BEGINNING OF THE SURFACE DRAINAGE AND POND EASEMENT HEREIN DESCRIBED, AND CONTAINING 17,578.0 SQUARE FEET, (0.404 ACRE), MORE OR LESS.

- EXHIBIT "B" -

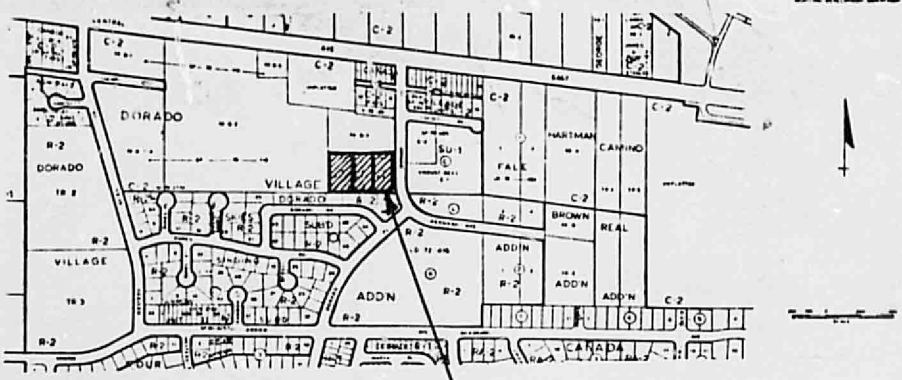
RCB 93

CITY OF ALBUQUERQUE L22-D8

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

VICINITY MAP

L-22-Z



PROJECT LOCATION

LEGAL DESCRIPTION:
TRACTS "B-4-1", "B-4-2", & "B-4-3"
UNIT THREE (3), DORADO VILLAGE,
ALBUQUERQUE, NEW MEXICO
(PLAT FILED: 5-16-79)

OWNER:
GERSHWIN ETTINGER

RICHARD CLARK BRYANT NEW MEXICO 6244 REGISTERED PROFESSIONAL ENGINEER 5-24-83

ENGINEER'S SEAL

NOTICE TO CONTRACTOR

1. An excavation/construction permit will be required before beginning any work within City right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.
2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with "Contract Documents for City-Wide Utilities and Cash Paving No. 31."
3. Two working days prior to any excavation, contractor must contact Line Locating Service, 765-1234, for location of existing utilities.
4. Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.
5. Backfill compaction shall be according to RESIDENTIAL street use.

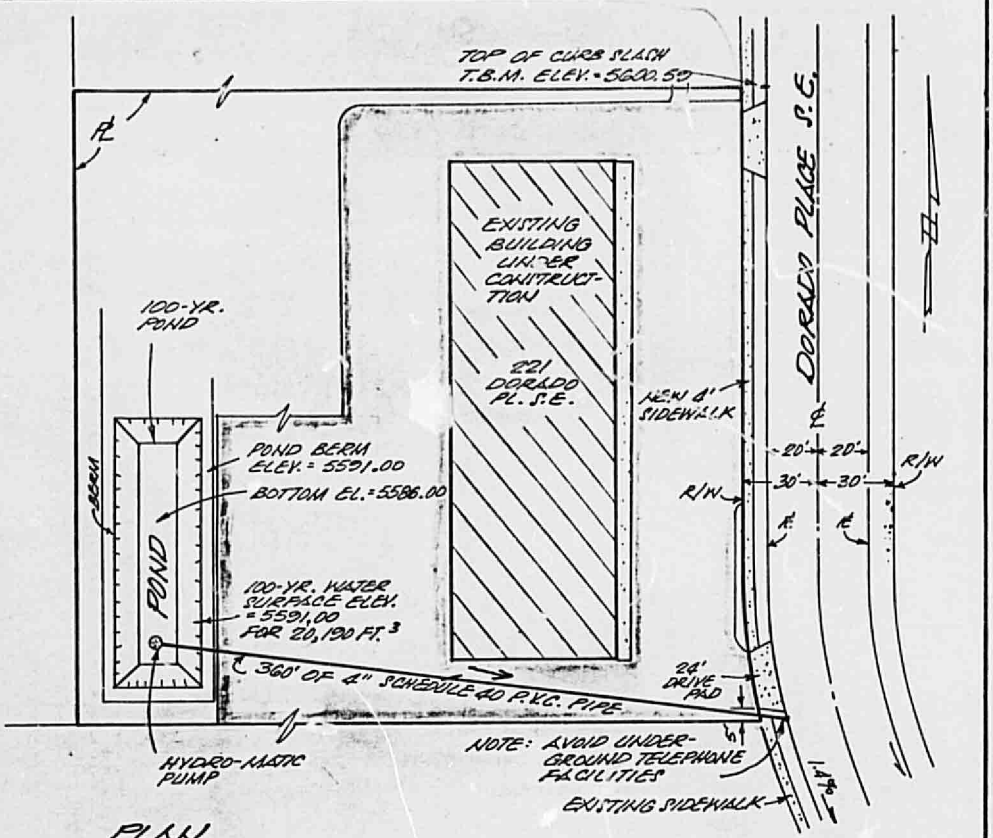
REVISION: 5-24-83 3Jun83 C-21

APPROVALS	NAME	DATE	TITLE: WAREHOUSE REMODEL FOR GERSHWIN ETTINGER	
A.C.E./DESIGN		4Feb83		
INSPECTOR		6/24/83	PERMIT NO.	MAP NO. L-22-Z
A.C.E./FIELD		6-30-83	SHEET 1 OF 2	

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT.

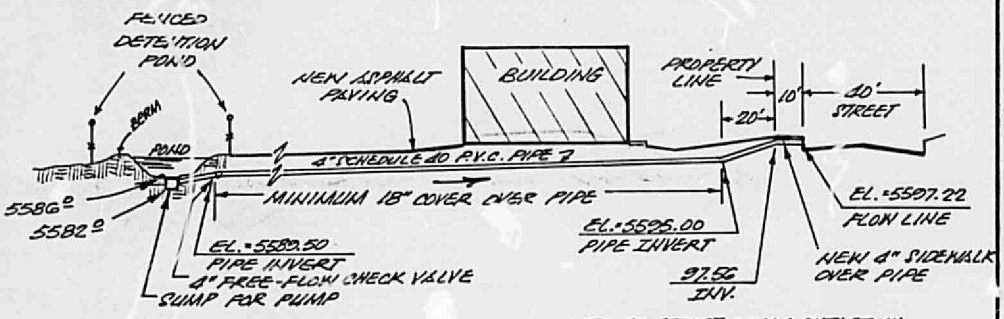
CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



PLAN

SCALE: 1" = 50'



NOTE: CONSTRUCT DRAIN OUTLET IN STREET R/W IN ACCORDANCE WITH CITY STANDARD DETAIL DRAWING K-15.

PROFILE

SCALE: 1" = 50' HORIZONTAL

REVISION: 5-24-83 GK 3 Jul 83

C-21

APPROVALS	NAME	DATE	TITLE: WAREHOUSE REMODEL FOR GERSHWIN ETTINGER	
A.C.E./DESIGN	[illegible]	4 Feb 83		
INSPECTOR	[illegible]	9/23/83	PERMIT NO.	MAP
A.C.E./ FIELD	[illegible]	6-30-83	SHEET 2 OF 2	NO. L-22-Z

STORM DRAINAGE STUDY

FOR

WAREHOUSES AT DORADO VILLAGE - UNIT 3

RECEIVED
JAN 18 1979
CITY ENGINEERS

JANUARY 1979

JACOB A VIGIL - CONSULTING ENGINEER

Jacob A. Vigil
Consulting Engineers

SUITE 1206
FIRST NATIONAL BANK
BUILDING - EAST
ALBUQUERQUE,
NEW MEXICO, 87108
(505) 255-5186

January 17, 1979

Mitchell Associates, P.A.
205 Fourth Street, S.W.
Albuquerque, New Mexico 87102

Attention: Mr. Don Mitchell

Dear Sir:

Transmitted herewith is the Storm Drainage Study for the Warehouses located at Dorado Village Unit 3. The recommendations in this Study are in accordance with the requirements of the City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority.

Thank you for the opportunity of serving you.

Respectfully submitted,

Jacob A. Vigil

Jacob A. Vigil, P.E.

JAV/bvm

TABLE OF CONTENTS

LETTER OF TRANSMITTAL

STORM DRAINAGE STUDY

1. Purpose . . . . . Page 1
2. Scope 1
3. Location. 1
4. Existing Drainage 1
5. Proposed. . . . . 1 & 2
6. Proposed Drainage Plan. 2
7. Conclusions and Recommendations 2

APPENDIX

1. Design Calculations . . . . . Page 1 - 7
2. Drainage Plan . . . . . Map "A"

STORM DRAINAGE STUDY

WAREHOUSES AT DORADO VILLAGE UNIT 3

I. PURPOSE: The purpose of this report is to formulate a comprehensive study of drainage affecting the site development and to show that the development does not restrict drainage in a manner to cause damage to adjacent land owners.

II. SCOPE: This report is limited to runoff originating within the development. General engineering procedures are presented for calculation of storm runoff and storage.

III. LOCATION: The site is located at 221 Dorado Place, S.E., in Albuquerque, New Mexico, and consists of 2.35 acres of sparse grass to bare soil. The tract description is Tract B-4, Dorado Village Unit 3.

IV. EXISTING DRAINAGE: The existing drainage is usually sheet flow flowing from front to rear of the lot. The existing paved streets with curb and gutter handle the runoff site drainage. There are no significant geological or topographic features.

V. PROPOSED DEVELOPMENT: The proposed development will consist of commercial warehouses. The coefficient of runoff "C" has

been estimated at 0.90 for impervious pavement.

VI. PROPOSED DRAINAGE PLAN: The proposed drainage plan is to contain all runoff after development by the use of dry wells (French Drains) with drop inlet structure and discharge pipes. The dry wells have been designated to store the maximum amount of rainfall occurring within one hour for a 100 year frequency with 100% retention. The berm at the rear of the property has been designed to retain the excess storage that would occur during a 24 hour storm with 100% retention.

VII. CONCLUSIONS AND RECOMMENDATIONS: On the basis of this study, the property under consideration can be adequately developed as proposed, if the project is constructed as recommended.

WAREHOUSES
(DON MITCHELL)

JACOB A. VAIL
SHT. 1 OF 2
JANUARY 15, 1979

1. DETERMINATION OF DRAINAGE AREAS:

AREA 1 = 90' x 124' = 11,160 FT²

AREA 2 = 124' x 124' = 15,376 FT²

AREA 3 = 120' x 124' = 14,880 FT²

AREA 4 = 75' x 124' = 9,300 FT²

AREA 5 = 75' x 130' = 9,750 FT²

AREA 6 = 120' x 130' = 15,600 FT²

AREA 7 = 125' x 130' = 16,250 FT²

AREA 8 = 88' x 130' = 11,440 FT²

2. RUNOFF DETERMINATION (VOLUME):
(100% RUNOFF)

$V_1 = 11,160\ FT^2 \times \frac{1.90''}{12} = 1,767\ FT^3$

$V_2 = 15,376\ FT^2 \times \frac{1.90''}{12} = 2,435\ FT^3$

$V_3 = 14,880\ FT^2 \times \frac{1.90}{12} = 2,356\ FT^3$

$V_4 = 9,300\ FT^2 \times \frac{1.90}{12} = 1,472\ FT^3$

$V_5 = 9,750\ FT^2 \times \frac{1.90}{12} = 1,544\ FT^3$

$V_6 = 15,600\ FT^2 \times \frac{1.90}{12} = 2,470\ FT^3$

WAREHOUSES
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2. CONT'D:

$V_7 = 16,250 \times \frac{1.90}{12} = 2,573 \text{ FT}^3$

$V_8 = 11,440 \times \frac{1.90}{12} = 1,811 \text{ FT}^3$

3. STORAGE REQUIREMENTS:

$S_1 = 1,767 \text{ FT}^3 \times 0.90$ (RUNOFF COEFFICIENT) $= 1,590 \text{ FT}^3$

$S_2 = 2,435 \text{ FT}^3 \times 0.90 = 2,192 \text{ FT}^3$

$S_3 = 2,356 \text{ FT}^3 \times 0.90 = [illegible]20 \text{ FT}^3$

$S_4 = 1,472 \text{ FT}^3 \times 0.90 = 1,325 \text{ FT}^3$

$S_5 = 1,544 \text{ FT}^3 \times 0.90 = 1,390 \text{ FT}^3$

$S_6 = 2,470 \text{ FT}^3 \times 0.90 = 2,223 \text{ FT}^3$

$S_7 = 2,573 \text{ FT}^3 \times 0.90 = 2316 \text{ FT}^3$

$S_8 = 1,811 \text{ FT}^3 \times 0.90 = 1630 \text{ FT}^3$

$14,786 \text{ FT}^3$ TOTAL

THE ABOVE FIGURES WILL BE USED FOR DETERMINATION OF THE SIZES FOR THE TRENCH DRAINS. THE TERRAIN SLOPES FROM FRONT TO REAR; THEREFORE, IT WILL BE NECESSARY TO PROVIDE A POSITIVE METHOD OF RETAINING FLOW WITHIN THE PROPERTY. IT IS RECOMMENDED THAT A "U" SHAPE PONDING AREA BE PROVIDED AT THE REAR AS A SAFETY PRECAUTION.

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4. DETERMINE RUNOFF FOR 24 HOUR DURATION – 100YR FREQUENCY:
(100% RUNOFF)

$$V_{TOTAL} = [11,160 + 15,376 + 14880 + 9,300 + 9,750 + 15,600 + 16,250 + 11,440 = 103,756\ FT^2] \times \frac{2.70''\ \text{PER 24 HRS}}{12''/FT} =$$

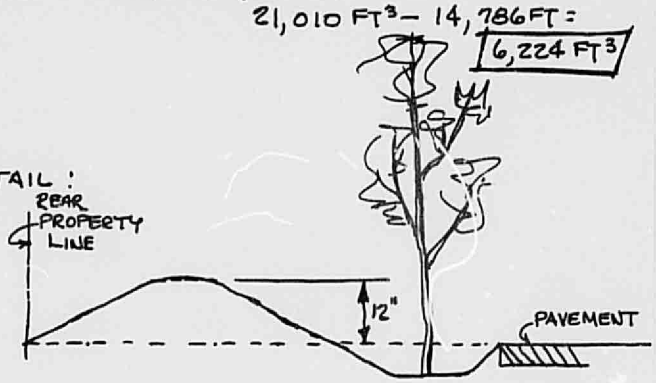
$$23,345\ FT^3 \longleftarrow$$

$$S_{TOTAL} = 23,345 \times 0.90 = 21,010\ FT^3$$

ADDITIONAL SURFACE STORAGE REQUIRED:

$21,010\ FT^3 - 14,786\ FT = \boxed{6,224\ FT^3}$

SUGGESTED DETAIL:



5. DETERMINE SIZE OF FRENCH DRAINS:

MINIMUM BOTTOM WIDTH 8 FT. (MINIMUM WIDTH FOR CONSTRUCTION EQUIP.)

MINIMUM DEPTH 4 FT WITH 2:1 SIDE SLOPES

$$D_1 = \frac{1,590\ FT^3}{0.40\ \text{POROSITY} \times 16\ \text{AVE WIDTH} \times 4'\ \text{DEPTH}} + 8\ FT$$

$= 70\ FT + 8'$

$= 78' \times 24'$ (TOP DIMENSIONS)

$62' \times 8'$ (BOTTOM DIMENSIONS)

EXAMPLE!

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5. CONT'D.

$$L_1 = \overset{(\text{AREA})}{A_1 + A_8} = \overset{(\text{STORAGE})}{S_1 + S_8}$$

$$L_1 = \frac{1{,}590\ FT^3 + 1{,}630\ FT^3}{0.40\ \text{POROSITY}} = 8{,}050\ FT^3\ \text{REQ'D}$$

$$FD_1 : \frac{8050\ FT^3}{4'\ \text{DEPTH} \times 16'\ \text{AVE WIDTH}} = 126\ FT\ \text{AVE LENGTH}$$

F.D. 1 : 24 FT. WIDE × 134 FT LONG (TOP DIMENSIONS)
8 FT. WIDE × 118 FT LONG (BOTTOM DIMENSIONS)

$$F.D._2 : \frac{\overset{S_2}{2{,}192} + \overset{S_7}{2{,}316}}{0.40 \times 4' \times 16'} = 176\ FT\ \text{AVE LENGTH}$$

24' × ~~168'~~ 184'
8' × 168'

$$F.D._3 : \frac{\overset{S_3}{2{,}120} + \overset{S_6}{2223}}{0.40 \times 4' \times 16'} = 169\ FT\ \text{AVE LENGTH}$$

24' × 177'
8' × 168'

$$F.D._4 : \frac{S_4 + S_5}{\frac{1325 + 1{,}590}{0.40 \times 4 \times 16'}} = 106\ FT\ \text{AVE LENGTH}$$

24' × 114'
8' × 98'

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6. DETERMINE PEAK RUNOFF TO DETERMINE SIZE OF DROP INLETS:

$$Q_1 = CIA = 0.90 \times 5.16 \times \frac{\overset{A_1}{11,160} + \overset{A_8}{11,440}}{43,560}$$

$Q_1 = 2.41$ CFS ←

$$Q_2 = 0.90 \times 5.16 \times \frac{\overset{A_2}{15,376} + \overset{A_7}{16,250}}{43,560}$$

$Q_2 = 3.37$ CFS ←

$$Q_3 = 0.90 \times 5.16 \times \frac{\overset{A_3}{14,880} + \overset{A_6}{15,600}}{43,560}$$

$Q_3 = 3.25$ CFS ←

$$Q_4 = 0.90 \times 5.16 \times \frac{9,300 + 9,750}{43,560}$$

$Q_4 = 2.03$ CFS ←

CAPACITY OF A 2'-0" X 3'-0" (INSIDE DIMENSIONS) DROP INLET:
L = 10'

$Q = CLH^{3/2}$
$= 3.30 \times 10 \times 0.67^{3/2}$
$= 18.0$ CFS 100% EFFICIENT
9.0 CFS 50% EFFICIENT > 3.37 CFS O.K.

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6. CONT'D.

DETERMINE PIPE CAPACITY OF 15" CM.P.

$Q = 9.0$ CFS

4.5 CFS PER PIPE

$\frac{HW}{D} = 1.2$ FROM FHWA CHART

$S = 2.50\%$ SLOPE REQUIRED!

$HW = 1.2 \times \frac{15''}{12''}$

$= 1.50$ FT. O.K.

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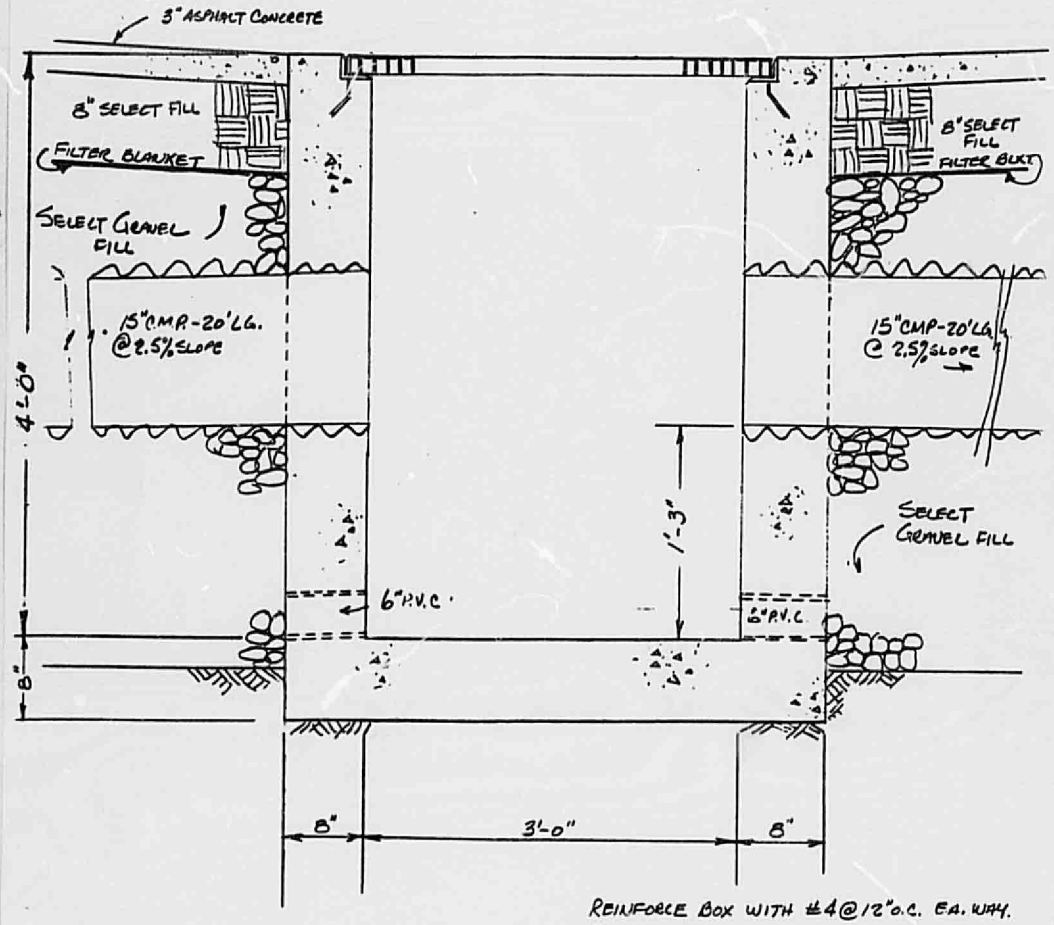

REINFORCE BOX WITH #4 @ 12" O.C. EA. WAY.
PROVIDE REBAR AROUND PIPE OPENINGS.

DROP INLET
(SECTION)